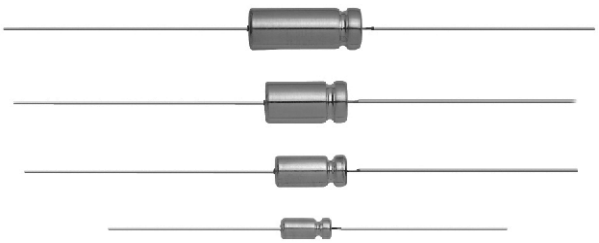
Wet Tantalum Capacitors Sintered Anode TANTALEX® Capacitors for Operation to +125 °C, Elastomer-Sealed



FEATURES

- Axial through-hole terminations: standard tin / lead (SnPb), 100 % tin (RoHS-compliant) available
- Vishay Sprague model 109D tubular elastomer-sealed, sintered anode TANTALEX® capacitors fill the basic requirements for applications where a superior quality, reliable design for industrial, automotive and telecommunications application is desired.
- Model 109D capacitors are the commercial equivalents of Tansitor style WC, UWC, Mallory-NACC style TLS, TLH and the military style CL64 and CL65, designed to meet the performance requirements of military specification MIL-DTL-3965.
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

RoHS* Available

HALOGEN FREE GREEN (5-2008) Available

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details.

PERFORMANCE CHARACTERISTICS

Operating Temperature: -55 °C to +85 °C
(to +125 °C with voltage derating)

Capacitance Tolerance: at 120 Hz, +25 °C.
± 20 % standard. ± 10 %, ± 5 % available as special.

DC Leakage Current (DCL max.):
at +25 °C, +85 °C, +125 °C: leakage current shall not exceed the values listed in the Standard Ratings tables.

Life Test: capacitors are capable of withstanding a 2000 h life test at a temperature of +85 °C or +125 °C at the applicable DC working voltage.

Following the life test:

1. DCL shall not exceed the initial requirements or 1 µA, whichever is greater.
2. The ESR shall meet the initial requirement.
3. Change in capacitance shall not exceed 10 % from the initial measurement. For capacitors with voltage ratings of 15 V_{DC} and below, change in capacitance shall not exceed + 10 %, - 25 % from the initial measurement.

ORDERING INFORMATION

109D	207	X0	006	C	0	E3
MODEL	CAPACITANCE	CAPACITANCE TOLERANCE	DC VOLTAGE RATING AT +85 °C	CASE CODE	STYLE NUMBER	RoHS-COMPLIANT
	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow	X0 = ± 20 % X9 = ± 10 % X5 = ± 5 % special order	This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 V)	See Ratings and Case Codes table	0 = no outer sleeve Standard 2 = outer plastic film insulation	E3 = 100 % tin termination (RoHS-compliant) Blank = SnPb termination (standard design)

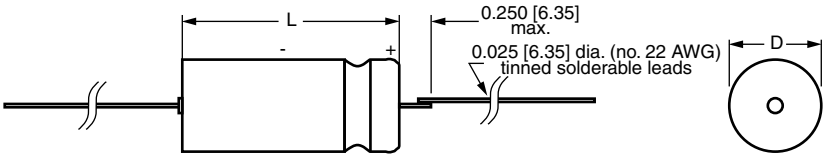
Note

- Packaging: the use of formed plastic trays for packaging these axial lead components is standard. Tape and reel is not available due to the unit weight.

For technical questions, contact: tantalum@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

DIMENSIONS in inches [millimeters]



CASE CODE	BARE TUBE		WITH PLASTIC-FILM INSULATING SLEEVE		LEAD LENGTH
	D	L	D Max.	L Max.	
C	0.188 ± 0.016 [4.78 ± 0.41]	0.453 + 0.031 / - 0.016 [11.51 + 0.79 / - 0.41]	0.219 [5.56]	0.608 [15.45]	1.500 ± 0.250 [38.10 ± 6.35]
F	0.281 ± 0.016 [7.14 ± 0.41]	0.641 + 0.031 / - 0.016 [16.28 + 0.79 / - 0.41]	0.312 [7.92]	0.796 [20.22]	2.250 ± 0.250 [57.15 ± 6.35]
T	0.375 ± 0.016 [9.53 ± 0.41]	0.766 + 0.031 / - 0.016 [19.46 + 0.79 / - 0.41]	0.406 [10.31]	0.921 [23.40]	2.250 ± 0.250 [57.15 ± 6.35]
K (1)	0.375 ± 0.016 [9.53 ± 0.41]	1.062 + 0.031 / - 0.016 [26.97 + 0.79 / - 0.41]	0.406 [10.31]	1.217 [30.91]	2.250 ± 0.250 [57.15 ± 6.35]

Note
(1) Replaces previous W case

RATINGS AND CASE CODES (Standard)

µF	6 V	8 V	10 V	15 V	20 V	25 V	30 V	35 V	50 V	60 V	75 V	100 V	125 V
1.7													C
2.5												C	
3.0												C	
3.5											C		
3.6													C
4.0										C			
4.5									C				
4.7												C	
5.0									C				
6.8											C		
7.0							C						
8.0							C						
8.2										C			
9.0													F
10						C			C			F	
11												F	
13											F		
14													F
15				C			C				F		
18													T
20			C							F			
22		C				C			F			F	
25		C							F				T
27					C	C							
30	C											T	
33				C							F		
39										F			
40							F				T		
43												T	
47			C						F				
50						F				T			
56		C									T		K
60									T				

For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

RATINGS AND CASE CODES (Standard)

µF	6 V	8 V	10 V	15 V	20 V	25 V	30 V	35 V	50 V	60 V	75 V	100 V	125 V
68	C						F	F		T			
70				F									
82									T				
86												K	
100			F			F / T	T						
110											K		
120				F				T					
140	F									K			
150							T						
160									K				
170				T									
180			F			T							
220		F			T								
250			T										
270	F			T				K					
290	T	T											
300							K						
330	T												
350						K							
390			T										
430		T											
540				K									
560	T												
750			K										
850		K											
1200	K												

RATINGS AND CASE CODES (Extended)

µF	6 V	8 V	10 V	15 V	20 V	25 V	30 V	35 V	50 V	60 V	75 V	100 V	125 V
2.0												C	
6.8													C
8.2												C	
10												C	
12											C		
15											C		
18										C			
22									C		C		
27										C			F
33								C	C			F	
39							C					F	T
47						C	C	C			F		T
56					C		C				F	T	K
68				C		C				F		T	
82				C	C				F		F		K
86												K	
100			C	C						F			
110											T		
120			C					F	F			K	
140	C									T			
150			C				F						
160									T				

For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

RATINGS AND CASE CODES (Extended)

µF	6 V	8 V	10 V	15 V	20 V	25 V	30 V	35 V	50 V	60 V	75 V	100 V	125 V
180		C				F	F				T		
200											T		
220					F		F	T		T	K		
250									T				
270				F		F			T	K	K		
330				F	F		T		K				
350						T							
390			F	F			T	T					
470		F	F				T	K					
510				T									
540				T									
560			F			T	K						
680		F				K							
750						K							
820	F			T / K									
1000			T	K									
1200			T / K										
1500	T		K										
1800		K											
2200	K												

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER [1]	MAX. ESR AT +25 °C 120 Hz (Ω)	MAX. IMP. AT -55 °C 120 Hz (Ω)	MAX. DCL (µA) AT		MAX. CAPACITANCE CHANGE (%) AT			MAX. RMS RIPPLE CURRENT 120 Hz (mA)
					+25 °C	+85 °C +125 °C	-55 °C	+85 °C	+125 °C	
6 V_{DC} AT +85 °C; 7 V_{DC} AT +125 °C										
30	C	109D306X0006C0	4.2	100	1.0	2.0	-40	+10.5	+12	140
68	C	109D686X0006C0	4.0	60	1.0	2.0	-40	+14	+16	160
140	F	109D147X0006F0	2.0	40	1.0	3.0	-40	+14	+16	330
270	F	109D277X0006F0	4.0	25	1.0	7.0	-44	+17.5	+20	270
290	T	109D297X0006T0	2.0	24	2.0	7.0	-70	+20	+20	410
330	T	109D337X0006T0	2.1	20	2.0	7.9	-44	+14	+16	410
560	T	109D567X0006T0	3.0	25	2.0	13	-64	+17.5	+20	340
1200	K	109D128X0006K0	1.6	20	3.0	14	-80	+25	+25	530
8 V_{DC} AT +85 °C; 5 V_{DC} AT +125 °C										
22	C	109D226X0008C0	6.0	115	1.0	2.0	-40	+10.5	+12	130
25	C	109D256X0008C0	4.2	100	1.0	2.0	-40	+10.5	+12	140
56	C	109D566X0008C0	4.0	59	1.0	2.0	-40	+14	+16	160
220	F	109D227X0008F0	4.0	30	1.0	7.0	-44	+17.5	+20	270
290	T	109D297X0008T0	2.0	24	2.0	9.5	-70	+20	+20	410
430	T	109D437X0008T0	3.2	25	2.0	14	-64	+17.5	+20	410
850	K	109D857X0008K0	1.0	22	4.0	16	-80	+25	+25	670
10 V_{DC} AT +85 °C; 7 V_{DC} AT +125 °C										
20	C	109D206X0010C0	5.0	175	1.0	2.0	-32	+10.5	+12	140
47	C	109D476X0010C0	5.0	100	1.0	2.0	-36	+14	+16	160
100	F	109D107X0010F0	2.1	60	1.0	4.0	-36	+14	+16	270
180	F	109D187X0010F0	4.0	40	1.0	7.0	-36	+14	+16	270
250	T	109D257X0010T0	2.0	30	2.0	10	-40	+14	+16	410
390	T	109D397X0010T0	3.0	25	2.0	16	-64	+17.5	+20	340
750	K	109D757X0010T0	1.0	23	4.0	16	-80	+25	+25	670

Note

[1] Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter "X" from "0" to "9". For units with outer plastic-film insulation, substitute "2" for "0" at the end of the part number. For RoHS-compliant add "E3".

For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER [1]	MAX. ESR AT +25 °C 120 Hz (Ω)	MAX. IMP. AT -55 °C 120 Hz (Ω)	MAX. DCL (µA) AT		MAX. CAPACITANCE CHANGE (%) AT			MAX. RMS RIPPLE CURRENT 120 Hz (mA)
					+25 °C	+85 °C +125 °C	-55 °C	+85 °C	+125 °C	
15 V_{DC} AT +85 °C; 10 V_{DC} AT +125 °C										
15	C	109D156X0015C0	6.0	155	1.0	2.0	-24	+10.5	+12	130
33	C	109D336X0015C0	5.0	90	1.0	2.0	-28	+14	+16	160
70	F	109D706X0015F0	3.6	75	1.0	4.0	-28	+14	+16	270
120	F	109D127X0015F0	4.0	50	1.0	7.0	-28	+17.5	+20	270
270	T	109D277X0015T0	3.0	30	2.0	16	-56	+17.5	+20	340
540	K	109D547X0015K0	1.2	23	6.0	24	-80	+25	+25	610
20 V_{DC} AT +85 °C; 13 V_{DC} AT +125 °C										
27	C	109D276X0020C0	5.0	100	1.0	2.0	-20	+11	+14	160
220	T	109D227X0020T0	4.0	3	2.0	16	-48	+13	+15	410
25 V_{DC} AT +85 °C; 15 V_{DC} AT +125 °C										
10	C	109D106X0025C0	6.0	220	1.0	2.0	-16	+8	+9	130
22	C	109D226X0025C0	5.0	140	1.0	3.0	-20	+10.5	+12	160
50	F	109D506X0025F0	4.0	70	1.0	5.0	-28	+13	+15	270
100	F	109D107X0025F0	4.0	50	1.0	10	-28	+13	+15	270
100	T	109D107X0025T0	4.0	45	2.0	10	-48	+13	+15	410
180	T	109D187X0025T0	4.0	32	2.0	18	-48	+13	+15	340
350	K	109D357X0025K0	1.3	24	7.0	28	-70	+25	+25	580
30 V_{DC} AT +85 °C; 20 V_{DC} AT +125 °C										
7.0	C	109D705X0030C0	8.0	275	1.0	2.0	-16	+8	+12	110
8.0	C	109D805X0030C0	7.5	275	1.0	2.0	-16	+8	+12	130
15	C	109D156X0030C0	8.0	175	1.0	2.0	-20	+10.5	+12	160
40	F	109D406X0030F0	4.0	65	1.0	5.0	-24	+10.5	+12	270
68	F	109D686X0030F0	6.0	60	1.0	8.0	-24	+13	+15	270
100	T	109D107X0030T0	6.0	40	2.0	12	-28	+10.5	+12	410
150	T	109D157X0030T0	4.1	35	2.0	18	-48	+13	+15	340
300	K	109D307X0030K0	1.6	25	8.0	32	-60	+25	+25	550
35 V_{DC} AT +85 °C; 22 V_{DC} AT +125 °C										
68	F	109D686X0035F0	6.0	60	1.0	8	-24	+12	+15	270
120	T	109D127X0035T0	4.0	38	2.0	16	-30	+13	+15	410
270	K	109D277X0035K0	2.2	23	8.0	32	-45	+20	+25	500
50 V_{DC} AT +85 °C; 30 V_{DC} AT +125 °C										
4.5	C	109D455X0050C0	9.0	400	1.0	2.0	-16	+5	+6	110
5.0	C	109D505X0050C0	9.0	400	1.0	2.0	-16	+5	+6	130
10	C	109D106X0050C0	8.0	250	1.0	2.0	-24	+8	+9	160
22	F	109D226X0050F0	7.0	95	1.0	4.0	-20	+10.5	+12	230
25	F	109D256X0050F0	6.0	95	1.0	5.0	-20	+10.5	+12	270
47	F	109D476X0050F0	6.0	70	1.0	9.0	-28	+13	+15	270
60	T	109D606X0050T0	3.0	45	2.0	12	-16	+10.5	+12	410
82	T	109D826X0050T0	4.0	45	2.0	16	-32	+13	+15	340
160	K	109D167X0050K0	2.2	27	8.0	32	-50	+25	+25	460

Note

[1] Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3“.

For technical questions, contact: tantalum@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER [1]	MAX. ESR AT +25 °C 120 Hz (Ω)	MAX. IMP. AT -55 °C 120 Hz (Ω)	MAX. DCL (µA) AT		MAX. CAPACITANCE CHANGE (%) AT			MAX. RMS RIPPLE CURRENT 120 Hz (mA)
					+25 °C	+85 °C +125 °C	-55 °C	+85 °C	+125 °C	
60 V_{DC} AT +85 °C; 40 V_{DC} AT +125 °C										
4.0	C	109D405X0060C0	10.0	550	1.0	2.0	-16	+5	+6	110
8.2	C	109D825X0060C0	8.0	275	1.0	2.0	-24	+8	+9	140
20	F	109D206X0060F0	5.0	105	1.0	5.0	-16	+10.5	+12	270
39	F	109D396X0060F0	7.0	90	1.0	9.0	-28	+10.5	+12	230
50	T	109D506X0060T0	4.0	50	2.0	12	-16	+10.5	+12	410
68	T	109D686X0060T0	6.0	50	2.0	16	-32	+10.5	+12	340
140	K	109D147X0060K0	2.4	28	8.0	32	-40	+20	+20	430
75 V_{DC} AT +85 °C; 50 V_{DC} AT +125 °C										
3.5	C	109D355X0075C0	10.0	650	1.0	2.0	-16	+5	+6	110
6.8	C	109D685X0075C0	8.0	300	1.0	2.0	-20	+8	+9	140
13	F	109D136X0075F0	6.0	160	1.0	4.0	-16	+8	+9	190
15	F	109D156X0075F0	6.5	150	1.0	5.0	-16	+8	+9	270
33	F	109D336X0075F0	7.0	90	1.0	10	-24	+10.5	+15	230
40	T	109D406X0075T0	5.0	60	2.0	12	-16	+10.5	+12	410
56	T	109D566X0075T0	6.0	60	2.0	17	-28	+10.5	+15	300
110	K	109D117X0075K0	3.1	29	9.0	36	-35	+20	+20	400
100 V_{DC} AT +85 °C; 65 V_{DC} AT +125 °C										
2.5	C	109D255X0100C0	26.5	950	1.0	2.0	-16	+7	+8	100
3.0	C	109D305X0100C0	10.0	800	1.0	2.0	-16	+7	+8	110
4.7	C	109D475X0100C0	10.0	500	1.0	2.0	-16	+7	+8	130
10	F	109D106X0100F0	6.0	215	1.0	4.0	-16	+7	+8	190
11	F	109D116X0100F0	6.0	200	1.0	4.0	-16	+7	+8	230
22	F	109D226X0100F0	7.0	100	1.0	9.0	-16	+7	+8	230
30	T	109D306X0100T0	4.0	80	2.0	12	-16	+7	+8	340
43	T	109D436X0100T0	6.0	70	2.0	17	-20	+7	+8	300
86	K	109D866X0100K0	3.1	30	9.0	36	-25	+15	+15	400
125 V_{DC} AT +85 °C; 85 V_{DC} AT +125 °C										
1.7	C	109D175X0125C0	54.6	1250	1.0	2.0	-16	+7	+8	100
3.6	C	109D365X0125C0	15.0	600	1.0	2.0	-16	+7	+8	110
9.0	F	109D905X0125F0	15.0	240	1.0	5.0	-16	+7	+8	210
14	F	109D146X0125F0	12.0	167	1.0	7.0	-16	+7	+8	190
18	T	109D186X0125T0	11.0	129	2.0	9.0	-16	+7	+8	340
25	T	109D256X0125T0	10.0	93	2.0	13	-16	+7	+8	260
56	K	109D566X0125K0	4.1	3.2	10	40	-25	+15	+15	400

Note

[1] Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3“.

For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

EXTENDED RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER (1)	MAX. ESR AT +25 °C 120 Hz (Ω)	MAX. IMP. AT -55 °C 120 Hz (Ω)	MAX. DCL (µA) AT		MAX. CAPACITANCE CHANGE (%) AT			MAX. RMS RIPPLE CURRENT 120 Hz (mA)
					+25 °C	+85 °C +125 °C	-55 °C	+85 °C	+125 °C	
6 V_{DC} AT +85 °C; 7 V_{DC} AT +125 °C										
140	C	109D147X0006C2	3.0	54	2.0	9.0	-45	+13	+16	160
820	F	109D827X0006F0	2.5	18	3.0	14	-88	+16	+20	300
1500	T	109D158X0006T0	1.5	18	5.0	20	-90	+20	+25	480
2200	K	109D228X0006K0	1.0	13	6.0	24	-90	+25	+30	670
8 V_{DC} AT +85 °C; 5 V_{DC} AT +125 °C										
180	C	109D187X0008C0	3.0	45	2.0	9.0	-60	+13	+16	180
470	F	109D477X0008F0	2.5	25	3.0	14	-75	+16	+20	300
680	F	109D687X0008F0	2.5	22	3.0	14	-90	+16	+20	300
1800	K	109D188X0008K0	1.0	14	7.0	25	-60	+20	+30	670
10 V_{DC} AT +85 °C; 7 V_{DC} AT +125 °C										
100	C	109D107X0010C0	3.0	60	2.0	9.0	-50	+13	+16	160
120	C	109D127X0010C0	4.0	60	2.0	9.0	-45	+13	+16	160
150	C	109D477X0010F0	3.0	54	2.0	9.0	-55	+13	+16	180
390	F	109D397X0010F0	2.5	30	3.0	16	-70	+16	+20	300
470	F	109D477X0010F0	2.5	30	3.0	16	-65	+16	+20	300
560	F	109D567X0010F0	2.5	27	3.0	16	-77	+16	+20	300
1000	T	109D108X0010T0	1.5	20	5.0	20	-75	+20	+25	480
1200	K	109D128X0010K0	1.0	18	7.0	25	-75	+30	+30	670
1200	T	109D128X0010T0	1.5	18	5.0	20	-88	+20	+25	480
1500	K	109D158X0010K0	1.0	15	7.0	25	-88	+25	+30	670
15 V_{DC} AT +85 °C; 10 V_{DC} AT +125 °C										
68	C	109D686X0015C0	4.0	80	2.0	9.0	-40	+13	+16	140
82	C	109D826X0015C0	4.0	80	2.0	9.0	-38	+13	+16	160
100	C	109D107X0015C0	4.0	72	2.0	9.0	-44	+13	+16	160
270	F	109D277X0015F0	2.5	35	3.0	16	-60	+16	+20	300
330	F	109D337X0015F0	2.5	35	3.0	16	-60	+16	+20	300
390	F	109D397X0015F0	2.5	31	3.0	16	-66	+16	+20	300
510	T	109D517X0015T0	1.8	25	6.0	24	-65	+20	+25	340
540	T	109D547X0015T0	1.8	22	6.0	24	-77	+20	+25	440
820	T	109D827X0015T0	1.8	22	6.0	24	-77	+20	+25	440
820	K	109D827X0015K0	1.2	20	8.0	32	-70	+30	+30	610
1000	K	109D108X0015K0	1.2	17	8.0	32	-77	+25	+30	610
20 V_{DC} AT +85 °C; 13 V_{DC} AT +125 °C										
56	C	109D566X0020C0	4.3	90	2.0	9.0	-38	+13	+16	140
82	C	109D826X0020C0	4.3	81	2.0	9.0	-43	+13	+16	160
220	F	109D227X0020F0	2.7	35	3.0	16	-60	+16	+20	300
330	F	109D337X0020F0	2.7	31	3.0	16	-66	+16	+20	300
25 V_{DC} AT +85 °C; 15 V_{DC} AT +125 °C										
47	C	109D476X0025C0	4.3	100	2.0	9.0	-35	+12	+15	140
68	C	109D686X0025C0	4.3	90	2.0	9.0	-40	+12	+15	160
180	F	109D187X0025F0	2.7	37	3.0	16	-55	+13	+16	300
270	F	109D277X0025F0	2.7	33	3.0	16	-62	+13	+16	300
350	T	109D357X0025T0	1.8	27	7.0	28	-60	+20	+25	440
560	T	109D567X0025T0	1.8	24	7.0	28	-72	+20	+25	440
680	K	109D687X0025K0	1.2	19	8.0	32	-72	+25	+30	610
750	K	109D757X0025K2	1.0	18	8.0	29	-60	+25	+25	610

Note

(1) Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3“.

For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

EXTENDED RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER [1]	MAX. ESR AT +25 °C 120 Hz (Ω)	MAX. IMP. AT -55 °C 120 Hz (Ω)	MAX. DCL (µA) AT		MAX. CAPACITANCE CHANGE (%) AT			MAX. RMS RIPPLE CURRENT 120 Hz (mA)
					+25 °C	+85 °C +125 °C	-55 °C	+85 °C	+125 °C	
30 V_{DC} AT +85 °C; 20 V_{DC} AT +125 °C										
39	C	109D396X0030C0	5.2	110	2.0	9.0	-28	+10	+12	140
47	C	109D476X0030C0	5.2	100	2.0	9.0	-30	+10	+12	140
56	C	109D566X0030C0	5.2	100	2.0	9.0	-38	+12	+15	140
150	F	109D157X0030F0	2.5	40	3.0	9.0	-40	+12	+15	300
180	F	109D187X0030F0	2.5	40	3.0	16	-45	+13	+16	300
220	F	109D227X0030F0	2.5	36	3.0	16	-60	+13	+16	300
330	T	109D337X0030T0	1.8	28	8.0	16	-45	+20	+25	440
390	T	109D397X0030T0	1.8	28	8.0	32	-50	+20	+25	440
470	T	109D477X0030T0	1.8	25	8.0	32	-65	+20	+25	550
560	K	109D567X0030K0	1.3	20	9.0	32	-65	+25	+30	590
35 V_{DC} AT +85 °C; 22 V_{DC} AT +125 °C										
33	C	109D336X0035C0	5.2	130	2.0	9.0	-30	+10	+12	140
47	C	109D476X0035C0	5.2	115	2.0	9.0	-35	+10	+12	140
120	F	109D127X0035F0	2.5	45	3.0	16	-45	+13	+16	300
220	T	109D227X0035T0	1.8	30	8.0	32	-45	+20	+25	440
390	T	109D337X0035T0	1.8	27	8.0	32	-58	+20	+25	440
470	K	109D477X0035T0	1.3	21	9.0	36	-58	+25	+30	590
50 V_{DC} AT +85 °C; 30 V_{DC} AT +125 °C										
22	C	109D226X0050C0	5.0	150	2.0	9.0	-24	+10	+12	140
33	C	109D336X0050C0	5.0	135	2.0	9.0	-29	+10	+12	140
82	F	109D826X0050F0	2.5	55	4.0	24	-35	+10	+15	300
120	F	109D127X0050F0	2.5	49	4.0	24	-42	+12	+15	300
160	T	109D167X0050T0	1.8	32	6.0	32	-35	+20	+25	420
250	T	109D257X0050T0	1.8	29	8.0	32	-40	+20	+25	440
270	T	109D277X0050T0	1.8	29	8.0	32	-46	+20	+25	440
330	K	109D337X0050K0	1.5	22	9.0	36	-46	+25	+30	550
60 V_{DC} AT +85 °C; 40 V_{DC} AT +125 °C										
18	C	109D186X0060C0	5.0	160	3.0	12	-20	+10	+12	140
27	C	109D276X0060C0	5.0	144	3.0	12	-24	+10	+12	140
68	F	109D686X0060F0	3.0	60	3.0	20	-30	+12	+15	270
100	F	109D107X0060F0	2.5	54	4.0	20	-36	+12	+15	300
140	T	109D147X0060T0	2.0	32	8.0	32	-30	+16	+20	420
220	T	109D227X0060T0	1.8	29	8.0	32	-40	+16	+20	440
270	K	109D277X0060K0	1.5	23	9.0	36	-45	+20	+25	550
75 V_{DC} AT +85 °C; 50 V_{DC} AT +125 °C										
12	C	109D126X0075C0	5.0	175	2.0	12	-12	+8	+10	140
15	C	109D156X0075C0	5.0	160	2.0	12	-14	+10	+12	140
22	C	109D226X0075C0	5.0	157	3.0	12	-19	+10	+12	140
47	F	109D476X0075F0	3.0	75	4.0	24	-18	+10	+12	270
56	F	109D566X0075F0	3.0	70	4.0	24	-20	+12	+15	270
82	F	109D826X0075F0	2.5	63	4.0	24	-30	+12	+15	300
110	T	109D117X0075T0	2.0	33	9.0	36	-25	+16	+20	420
180	T	109D187X0075T0	1.8	30	9.0	36	-35	+16	+20	440
200	T	109D207X0075T0	1.8	29	8.0	32	-40	+20	+25	440
220	K	109D227X0075K0	2.2	24	10	40	-40	+20	+25	450
270	K	109D277X0075K2	1.3	24	10	40	-40	+20	+25	450

Note

[1] Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3“.

For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

EXTENDED RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER [1]	MAX. ESR AT +25 °C 120 Hz (Ω)	MAX. IMP. AT -55 °C 120 Hz (Ω)	MAX. DCL (µA) AT		MAX. CAPACITANCE CHANGE (%) AT			MAX. RMS RIPPLE CURRENT 120 Hz (mA)
					+25 °C	+85 °C +125 °C	-55 °C	+85 °C	+125 °C	
100 V_{DC} AT +85 °C; 65 V_{DC} AT +125 °C										
2.0	C	109D205X0100C0	14.0	870	3.0	12	-20	+12	+12	100
8.2	C	109D825X0100C0	6.0	250	3.0	12	-12	+12	+12	130
10	C	109D106X0100C0	6.0	200	3.0	12	-17	+10	+12	130
33	F	109D336X0100F0	3.5	85	4.0	24	-18	+15	+15	250
39	F	109D396X0100F0	3.5	80	5.0	24	-20	+12	+15	250
56	T	109D566X0100T0	2.2	45	9.0	36	-20	+15	+15	400
68	T	109D686X0100T0	2.2	40	10	40	-30	+14	+16	400
86	K	109D866X0100K0	3.2	30	10	40	-25	+15	+15	370
120	K	109D127X0100K0	2.8	30	12	48	-35	+15	+17	440
125 V_{DC} AT +85 °C; 85 V_{DC} AT +125 °C										
6.8	C	109D685X0125C0	11.7	300	3.0	12	-14	+10	+12	130
27	F	109D276X0125F0	3.5	90	5.0	24	-18	+12	+15	250
39	T	109D396X0125T0	2.2	60	10	40	-16	+14	+16	400
47	T	109D476X0125T0	2.2	50	10	40	-26	+14	+16	400
56	K	109D566X0125K0	4.1	32	10	40	-25	+15	+15	330
82	K	109D826X0125K0	2.8	32	12	48	-30	+15	+17	440

Note

[1] Part numbers shown are for units with ± 20 % capacitance tolerance and uninsulated capacitors. For ± 10 % units, change the digit following the letter “X” from “0” to “9”. For units with outer plastic-film insulation, substitute “2” for “0” at the end of the part number. For RoHS-compliant add “E3“.

For technical questions, contact: tantalum@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.